AMENDMENTS TO THE DRAWINGS:

Enclosed herewith, as an Appendix, are Replacement Sheets for sheets 3/7 and 5/7. These Replacement Sheets amend Figs. 5 and 9 to refer to gap "99" formed between the casing 6 and the ring shaped plate 8, consistent with amendments to the specification of the above-identified application. Fig. 5 has been further amended to delete the reference character 19 and the associated lead line.

In view of the amendments to the drawings, as seen on the Replacement Sheets, and amendments to the specification discussed infra, it is respectfully submitted that objections to the drawings set forth in Items 3-5 on pages 2 and 3 of the Office Action mailed June 17, 2004, have been overcome.

Specifically, in view of the use of reference character 99, the objection as set forth in Item 3 on page 2 of the Office Action mailed June 17, 2004, has been overcome. Furthermore, in light of deletion of reference character 19 and the lead line therefor from Fig. 5, it is respectfully submitted that the objection to the drawings set forth in Item 4, bridging pages 2 and 3 of the Office Action mailed June 17, 2004, with respect to reference character 19, has been overcome. Furthermore, in view of amendments to the specification, discussed infra, it is respectfully submitted that reference character 97 is now set forth in the specification, and reference character 30 no longer is set forth in the specification (having been replaced by reference character 62, seen in Fig. 3); and, accordingly, the bases for objection to the drawings in Items 4 and 5 on pages 2 and 3 of the Office Action mailed June 17, 2004, have been overcome.

REMARKS

Applicants have amended their specification to change reference characters 27, 16 and 30 to 97, 99 and 62, respectively. It is respectfully submitted that these amendments to the specification do not add new matter to the application. In light of these amendments to the specification, and the amendments to the drawings discussed supra in this Amendment, it is respectfully submitted that the drawing objections are moot.

Applicants have amended their claims in order to further clarify the definition of various aspects of the present invention. Specifically, Applicants have amended claims 1 and 15 to recite that the cooling apparatus is located below the catalyst layer; and have amended claims 17 and 19, respectively, to recite that the cooling apparatus is arranged in the casing at a location below the catalyst layer and at a downstream side from the catalyst layer, in the direction of flow of the exhaust gas; and to recite that the cooling apparatus is arranged in the casing below the catalyst layer, in the direction of flow of the exhaust gas.

In addition, Applicants are adding new claims 21-24 to the application. Claims 21, 23 and 24 are directed to a perfluoride compound processing apparatus, and claim 22 recites a perfluoride compound processing apparatus for semiconductor manufacturing apparatus.

These new claims 21 and 22 recite that the apparatus includes a silicon component removing apparatus for removing a silicon component from an exhaust gas; a heating apparatus for heating the exhaust gas containing the perfluoride compound, to which at least one of water and steam is added after exhausting the exhaust gas from the silicon component removing apparatus; a catalyst layer for

decomposing the perfluoride compound; a cooling apparatus arranged at a portion below the catalyst layer for cooling the exhaust gas exhausted from the catalyst layer; and a cooling water supplying apparatus for supplying cooling water to the silicon component removing apparatus for contacting with the exhaust gas, the cooling water having been supplied to the cooling apparatus and used for cooling the exhaust gas.

Claims 23 and 24 define a perfluoride compound processing apparatus including a silicon component removing apparatus for removing a silicon component from an exhaust gas containing a perfluoride compound and the silicon component, with claim 24 reciting that the exhaust gas has been exhausted from a semiconductor manufacturing apparatus; a heating apparatus, downstream of the silicon component removing apparatus in a direction of flow of the exhaust gas, for heating the exhaust gas to which at least one of water and steam is added after the exhaust gas has exited from the silicon component removing apparatus, the heating apparatus being arranged in a casing; a catalyst layer for decomposing the perfluoride compound, arranged detachably in the casing at a downstream side of the heating apparatus in the direction of flow of the exhaust gas; a cooling apparatus arranged in the casing at a portion below the catalyst layer in the direction of flow of the exhaust gas for cooling the exhaust gas containing a decomposed gas generated by decomposition of the perfluoride compound; and a cooling water supplying apparatus for supplying cooling water to the silicon component removing apparatus for contacting with the exhaust gas, with the cooling water having been supplied to the cooling apparatus and used for cooling the exhaust gas.

Concerning the amendments to the previously considered claims, and the newly added claims, see Figs. 3, 8 and 11, for example, of Applicants' disclosure, and the corresponding descriptions on pages 14, 15, 26-29 and 32-34, of Applicants' specification.

The provisional rejection of claims 1-20 under 35 USC §101 as claiming the same invention as that of claims 11-26 and 29-32 of copending Application No. 10/244,010, is noted. Such claims 11-26 and 29-32 are being cancelled from copending Application No. 10/244,010. In view thereof, it is respectfully submitted hat the provisional double patenting rejection is moot.

Applicants respectfully submit that all of the claims presented for consideration by the Examiner patentably distinguish over the teachings of the references applied by the Examiner in the prior art rejections set forth in the Office Action mailed June 17, 2004, that is, the teachings of the U.S. patents to Rossin, et al., No. 6,069,291, to Tom, et al., No. 6,030,591, to Seppänen, et al., No. 5,674,797, to Imamura, No. 5,649,985, to Izumikawa, et al., No. 6,022,489, to Holst, et al., No. 5,955,037, and to Smith, et al., No. 5,417,934, under the provisions of 35 USC §103.

It is respectfully submitted that these references as applied by the Examiner would have neither taught nor would have suggested such a perfluoride compound processing apparatus, or such an exhaust gas processing apparatus for a semiconductor manufacturing apparatus, as in the present claims, including, inter alia, the heating apparatus for heating the exhaust gas to which water or steam is added after the exhaust gas exits a silicon component removing apparatus, and the cooling apparatus, located below the catalyst layer, for cooling the exhaust gas

exhausted from the catalyst layer. See claim 1; note also each of claims 15, 17, 19 and 21-24.

Moreover, it is respectfully submitted that these references would have neither taught nor would have suggested such apparatus as in the present claims, as discussed previously, with the cooling apparatus being arranged in a casing below the catalyst layer, the catalyst layer and other components also being arranged in the casing. See claims 17 and 19. Note also claims 23 and 24.

Furthermore, it is respectfully submitted that the teachings of these applied references would have neither disclosed nor would have suggested such a perfluoride compound processing apparatus, or such perfluoride compound processing apparatus for semiconductor manufacturing apparatus, as in the present claims, including, inter alia, wherein the apparatus has in addition to, e.g., the cooling apparatus, a cooling water supplying apparatus for supplying cooling water to the silicon component removing apparatus for contacting with the exhaust gas, this cooling water having been supplied to the cooling apparatus and used for cooling the exhaust gas. Note each of claims 21-24.

Moreover, it is respectfully submitted that these applied references would have neither taught nor would have suggested such apparatus as in the present claims, having features as discussed previously, with additional features as in the dependent claims 2-14, 16, 18 and 20.

Through use of the cooling apparatus and cooling water supplying apparatus according to the present invention, effective and efficient location of the apparatus, occupying a minimal area, can be achieved, which is especially effective in connection with semiconductor manufacturing apparatus wherein it is desired to

minimize the space occupied by the processing apparatus, e.g., in clean rooms. In addition, with the cooling water supplying apparatus as in various of the present claims, effective and efficient use of water, with efficient heating/cooling in the process apparatus, are achieved.

Rossin, et al. discloses a catalytic process particularly for the treatment of perfluoroalkanes. The process includes contacting the perfluoroalkane with aluminum oxide at a temperature ranging from about 400°C to about 1,000°C. See column 2, lines 53-65. Note also column 3, lines 8-11, describing that according to an embodiment the perfluoroalkane is contacted with aluminum oxide in the presence of water and an oxidizing agent. Note also column 5, lines 13-21.

It is respectfully submitted that Rossin, et al. discloses a catalytic process; and it is respectfully submitted that this reference would have neither disclosed nor would have suggested the apparatus as in the present claims, including, inter alia, the heating apparatus, the cooling apparatus and the cooling water supplying apparatus, as well as other components of apparatus according to the present invention.

It is respectfully submitted that the secondary references applied in all of the claim rejections, Tom, et al. and Seppänen, et al., would not have rectified the deficiencies of Rossin, et al., referred to previously, such that the presently claimed invention as a whole would have been obvious to one of ordinary skill in the art.

Tom, et al. discloses a method and apparatus for concentration and recovery of halocarbons, from process effluent gas streams, the gas streams including a carrier gas, halocarbons, by-products generated from a process employing the halocarbons and producing by-products, and optionally contaminating process gases. The method includes contacting the gas stream with at least one scrubber to

remove the by-products from the gas stream, thereby yielding a first effluent gas mixture containing the halocarbon and being substantially free of the by-products, the first effluent gas mixture being subjected to a process for removing the halocarbon from the effluent gas mixture and concentrating the same for a subsequent recovery of the halocarbon. See column 4, lines 17-30. Note also column 5, lines 14-18; and the paragraph bridging columns 10 and 11.

Seppänen, et al. discloses a method for regenerating a hydrogenation catalyst employed in the production of hydrogen peroxide, the catalyst being regenerated in such a way that the spent catalyst is treated with a working solution that has been subjected to oxidation only during the working solution cycle. See column 1, lines 58-67 of this patent. Note also column 2, lines 36-40.

Initially, note that Seppänen, et al. is directed to a method for regenerating a hydrogenation catalyst. It is respectfully submitted that one of ordinary skill in the art concerned with in Rossin, et al. and/or Tom, et al, would not have looked to the teachings of Seppänen, et al. That is, in view of the different technologies and problems involved, Seppänen, et al. is directed to a non-analogous art with respect to Rossin, et al. and/or Tom, et al.

Furthermore, it is respectfully submitted that the Examiner has pointed to no proper motivation for combining the teachings of Seppänen, et al. with the teachings of Rossin, et al. and Tom, et al., as applied in rejecting claims in the Office Action mailed June 17, 2004.

In any event, even assuming, arguendo, that the teachings of the applied references were properly combinable, such teachings would have neither disclosed nor would have suggested the presently claimed subject matter, including, inter alia,

the heating apparatus, the cooling apparatus and/or the cooling water supplying apparatus as in the present claims and as discussed previously, and/or the other features of the present invention as discussed previously.

In connection with claim 10, Imamura discloses a method for effectively removing harmful and toxic substances of a generally highly metal-corrosive exhaust gas with or without dust discharged from a semiconductor manufacturing process, the method including, inter alia, heating a water-scrubbed exhaust gas to thermally decompose a thermally decomposable component contained therein, and removing dust generated by the thermal decomposition from the thermally decomposed exhaust gas by way of water scrubbing to render the thermally decomposed exhaust gas into a clean exhaust gas. See column 2, lines 45-50. This patent discloses use of a heat exchanger for heating the water-scrubbed exhaust gas by utilizing heat of the thermally decomposed exhaust gas of high temperature. See column 3, lines 38-41, in connection with a third feature of the apparatus described therein which is disclosed most generally at column 3, lines 28-54.

Izumikawa, et al. discloses a process for decomposing fluorocarbons, by contacting perfluorocarbon or hydrofluorocarbon gas with a reagent including carbon and at least one alkaline earth metal, at a temperature of 300°C or higher and in the presence of 20 vol% or less (but not 0%) of gaseous oxygen. See column 1, lines 59-63. Fig. 6 of this patent shows heat exchange between treatment gas prior to entering the reactor and exhaust gas which has left the reactor, during the process of the invention.

Even assuming, arguendo, that the teachings of Imamura or Izumikawa, et al. were properly combinable with the teachings of Rossin, et al., Tom, et al. and

Seppänen, et al., as applied by the Examiner, and that the teachings of Rossin, et al, Tom, et al. and Seppänen, et al. were properly combinable, it is respectfully submitted that the combined teachings of these references would have neither disclosed nor would have suggested such structure as in the present claims, including the heating apparatus, the cooling apparatus specifically positioned as in the present claims, and/or the cooling water supplying apparatus, and advantages thereof; or the other features of the present invention as in the dependent claims, and advantages thereof.

In connection with the remaining rejections set forth in Items 9 and 10 on pages 6 and 7 of the Office Action mailed June 17, 2004, with respect to claims 2, 11-14 and 17-20, it is respectfully submitted that the teachings of the applied prior art would have neither disclosed nor would have suggested the present invention, including features as discussed previously.

Holst, et al. discloses an integrated effluent gas treatment system configured to include in a unitary housing as a compact point of use device, various components, such integrated effluent gas treatment system possibly utilizing a pre-scrubber, an oxidizer and scrubber assembly, in connection with a clog-resistant inlet structure for introducing a fluid stream to the assembly from an upstream process facility. See column 3, line 50 to column 4, line 12.

Smith, et al. discloses chemical exhaust gas conditioning units operating in two main sections and an optional third section, the effluent gases passing first through a section in which the active chemical component is elemental silicon and second through a section in which the active component is lime or soda lime. This patent further discloses that, optionally, the gas can be passed through a third

section in which the active components are lime and copper oxides. See column 2, lines 5-13.

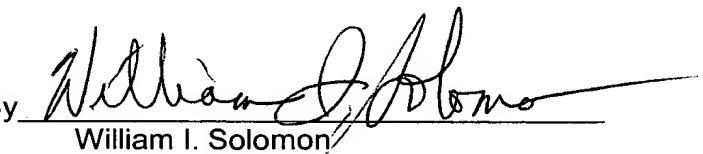
Even assuming, arguendo, that the teachings of Holst, et al. or Smith, et al. were properly combinable with the teachings of the other references as applied by the Examiner in Items 9 and 10 on pages 6 and 7 of the Office Action mailed June 17, 2004, it is respectfully submitted that the teachings of the applied references would have neither taught nor would have suggested such apparatus as in the present claims, including, inter alia, the heating apparatus, the cooling apparatus with location thereof, and/or the cooling water supplying apparatus, and advantages thereof in connection with the present invention; and/or with additional features of the present invention as in the dependent claims, and advantages thereof.

In view of the foregoing comments and amendments, reconsideration and allowance of all claims remaining in the application are respectfully requested.

To the extent necessary, Applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to the Antonelli, Terry, Stout & Kraus, LLP Deposit Account No. 01-2135 (Docket No. 503.36712VX1), and please credit any excess fees to such Deposit Account.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP

By 
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